

# WEEKLY CROP UPDATE



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## Vegetable Crops

**Vegetable Crop Insect Scouting** - David Owens, *Extension Entomologist*, [owensd@udel.edu](mailto:owensd@udel.edu)

### Cucurbits

Striped cucumber beetle aggregations have been observed this week in cantaloupe and squash. Begin scouting all watermelon transplants! This includes plants on the transplant wagons, recently transplanted, and any cucurbit in the ground besides watermelon. Thresholds in watermelons are 2 beetles per plant. The most effective insecticides early-season and pre-bloom are neonicotinoids injected through the drip, provided it is done correctly. Pay attention to label guidelines on how much insecticide should be used per 1,000 row feet of drip tape and your given row spacing. Note that the amount changes depending on how far apart the beds are (5 ft centers use less insecticide per 1,000 feet of drip than 7 ft centers, but there is more drip tape). It may seem to make sense to only use the amount covered by plastic as the treated area, but this will result in a serious under-treatment! Cucurbits transplanted early may be in bloom already. In such cases, consider using Assail over a foliar thiamethoxam or imidacloprid. A couple of diamides are labeled for striped cucumber beetle but are best used later in the season when rind worms are also a problem. Assail will not impact the worm complex, and the diamides are superb worm insecticides.

### Potato and Eggplant

Colorado potato beetles continue to migrate into fields. Potato thresholds are 50 beetles per 50 stems and up to 200 small larvae per 50 stems (or 15-20% defoliation). Eggplant defoliation thresholds are lower, at 10%. If a neonicotinoid was used in furrow, switch modes of action. The diamides give excellent CPB control, as do other products typically used against other pests such as Radiant (often for worms), Agri-Mek (typically a miticide), and Torac. Later in the season, Agri-Mek has the added benefit of being an excellent miticide. Eggplants are quite susceptible to mite injury.

### Mites

In diverse farm scapes, mites may be harbored in early season vegetables. This week we visited strawberry fields scouting for mites, cyclamen mite, and tarnished plant bug. If you have experienced cyclamen mite damage, please let us know!!! We are trying to get a better understanding of the impact this critter has on strawberry production. In a couple of locations, summer vegetables were transplanted within fairly close proximity to strawberries. Scout these plants carefully for mites. Strawberry can harbor large populations of mites before plant health is significantly impacted, but that is not true of tomatoes, eggplants, and some cucurbits.

### Beans

We are starting to see seedcorn maggot damage in our legume trials on station. While warm, dry weather is not as conducive to SCM, it only takes a couple of days of the wrong conditions in a

highly attractive field to result in significant injury. Still consider using an insecticidal seed treatment. Plants that have been impacted by SCM will be stunted, the stems below ground will be swollen, or you may see a 'snake head' plant where the cotyledons emerge but the growing point has been damaged/died above the cotyledons. Begin scouting for bean leaf beetle. It should be making an appearance soon.

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**Tipburn in Brassica Crops and Lettuce** -  
*Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)*

Cauliflower, cabbage, Brussels sprouts, Chinese cabbage (Napa cabbage) and lettuce are susceptible to tipburn. This problem can cause severe economic losses. Tipburn is a breakdown of plant tissue inside the head of cabbage, Chinese cabbage and lettuce, individual sprouts in Brussels sprouts, and on the inner wrapper leaves of cauliflower. It is a physiological disorder which is associated with an inadequate supply of calcium in the affected leaves, causing a collapse of the tissue and death of the cells.



Tipburn in cabbage

Calcium deficiency may occur where the soil calcium is low or where there is an imbalance of nutrients in the soil along with certain weather and soil nutrient conditions, such as high humidity, low soil moisture, high potassium, or high nitrogen all of which can reduce calcium availability. Secondary rot caused by bacteria can follow tipburn and heads of cauliflower can be severely affected. Some cabbage and cauliflower cultivars are relatively free of

tipburn problems. Tipburn ratings for cabbage are given in the Mid-Atlantic Commercial Vegetable Production Recommendations. Lettuce grown in high tunnels and greenhouses can also have tipburn problems.

Growing conditions including high humidity, lack of air movement, and poor root system development can lead to tipburn problems in lettuce. The disorder most frequently occurs as the head is beginning to reach maturity. The inner part of the head has locally humid conditions and less airflow due to the presence of the outer, wrapper leaves.



Tipburn in greenhouse lettuce.

Controlling tipburn starts with managing liming so that soil pH is above 6.0. Limit ammonium forms of nitrogen and ensure an adequate and even supply of water. Adjust planting date so that head maturation occurs during cooler temperatures. Plant a cultivar that is less susceptible to the disorder. In hydroponic growing systems, maintain calcium levels in growing solutions at 90 ppm and have good air circulation. In general, calcium foliar sprays have not been shown to be effective for controlling tipburn incidence.

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**Broad Mites on High Tunnel Tomatoes** -  
*Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)*

A grower was having symptoms of twisted foliar growth and browning/bronzing of their tomato leaves and fruit. The problem was broad mites (*Polyphagotarsonemus latus*). Usually, we do not

see broad mites as a problem in May in our high tunnel tomatoes. However, the grower did not clean up their high tunnel from last fall's tomato crop until several weeks before they planted their spring crop of tomatoes. Unfortunately, there was a small infestation of broad mites in the fall crop of tomatoes that was able to overwinter. It is important that growers clean up their high tunnel or greenhouse (GH) well in advance of another crop in case there is a small infestation (or disease problem) that had started in the last crop. Sanitation is key to keeping pest problems out of a high tunnel or GH.

Female broad mites are oval, 0.2 mm long and are yellow or green with an indistinct, light, median stripe that forks near the back end of the body. Males are similar in color but lack the stripe. The translucent, colorless oval eggs are firmly attached to the surface of a leaf. The eggs are very distinctive and are usually used to identify whether or not broad mites are present (often times adults or immatures cannot be found on a sample, but the eggs will be). The eggs are covered with scattered white tufts on their outer surface that look like round dots (Fig. 1). Immature broad mites are white and slow moving. After just one day, the larva becomes a quiescent nymph which is clear and pointed at both ends. When females emerge from this quiescent stage, males immediately mate with them. Adult females lay a total of 30 to 76 eggs on the undersides of leaves and in the depressions of small fruit over an eight- to 13-day period and then die. Adult males may live five to nine days. While unmated females lay eggs that become males, mated females usually lay four female eggs for every male egg. Males and females are very active, but the males evidently account for much of the dispersal of a broad mite population when they carry the quiescent female to new leaves.

### Hosts

The broad mite has a wide range of host plants: apple, avocado, cantaloupe, castor, chili, citrus, coffee, cotton, eggplant, grapes, guava, jute, mango, papaya, passion fruit, pear, potato, sesame, string or pole beans, tea, tomato and watermelon. Broad mites also infest many ornamentals, including African violet, ageratum, azalea, begonia, chrysanthemum, cyclamen,

dahlia, gerbera, gloxinia, ivy, jasmine, impatiens, lantana, marigold, peperomia, pittosporum, snapdragon, verbena, and zinnia. Their ability to attack both vegetables and ornamental plants make them especially troublesome in greenhouses that grow both.

### Damage

The damage caused by broad mites can look similar to the damage caused by viruses, herbicides or nutrient deficiencies. They feed on plant cells within the leaf epidermis using their piercing-sucking mouthparts. Early feeding is mainly concentrated near the growing point on the underside of a leaf near the stalk, which tends to cause the leaf to curl and become twisted and distorted (Fig. 2). More serious infestations cause leaf bronzing leaving the main veins green against the brown leaf tissue that eventually turns black, shrivels and dies (Fig. 3). Corky patches frequently appear on fruits that often crack at the site of deformation (Fig. 4). Extensive damage can be caused by relatively low populations. Commonly, the lower leaves of a plant can remain unaffected while the younger leaves are badly damaged. Symptoms of feeding damage can remain visible several weeks after the mites have been removed. Therefore, after treatments the plants need to be checked again for the presence of the mite, even though damage may still be apparent.

### Management

Once the mites have been positively identified as the cause of the tomato deformities horticultural oils or sulfur can be used that produce results similar to synthetic chemical applications. The most important aspect of the application is thorough coverage. The material needs to get down into tightly wrapped growing points and to the underside of leaves. Be careful when applying the oils or sulfur as they can cause phytotoxicity under hot humid conditions. Portal XLO has been found to control broad mites in tomato (IRAC subgroup 21A) and should be rotated with other miticides (hort oils, sulfur, Oberon, Agri-Mek, etc.) that have a different mode of action (i.e., a different IRAC No.). As in the case of oils and sulfur Portal is a contact miticide and for best performance uniform and thorough spray coverage is needed. The addition of a nonionic wetting or penetrating adjuvant to

the synthetic chemicals is recommended to improve their performance.

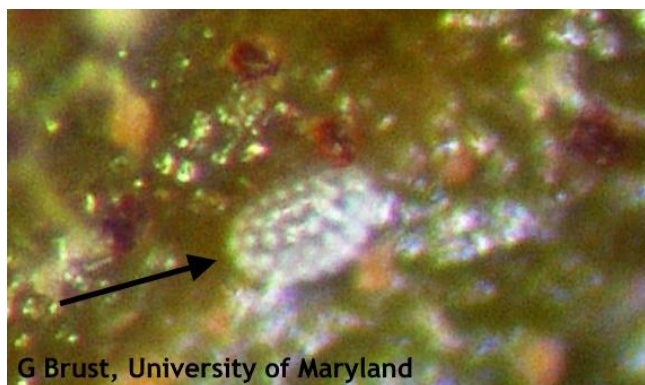


Figure 1. Broad mite egg greatly magnified.



Figure 2. Leaves of tomato twisted and deformed by broad mite feeding



Figure 3. Severe broad mite feeding causing bronzing of leaves--leaving green veins



Figure 4. Damaged and aborted cherry tomato fruit due to broad mite feeding

**Consumer Survey on Specialty Pumpkin Preferences** - *Emmalea Ernest, Scientist - Vegetable & Fruit Crops; [emmalea@udel.edu](mailto:emmalea@udel.edu) and Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)*

Many specialty pumpkin varieties are available and perhaps you are still considering which varieties to plant in 2023. In 2021 and 2022 Gordon grew more than thirty different varieties in demonstration plots. In 2022 we conducted consumer surveys at two different events in September and collected responses from 137 people. Survey participants were asked to indicate which pumpkins they liked. The most frequently chosen varieties are listed below and pictured in Figure 1. Warty types, blue types, varieties with striped and mottled coloration, white pumpkins and flat types were popular. Yellow varieties, tan (butternut colored) varieties and unusually shaped orange varieties were less favored by survey participants (Figure 2).

Rank	Varieties
1	One Too Many
2 (tie)	Warty Goblin, Knucklehead
3	Blue Ice
4	Sugar Cup, Blaze
5 (tie)	Specter, Galeaux d'Eysines
6	Silver Moon
7	Polar Bear
8	Flat Stacker
9 (tie)	Fairytale, Mini Warts
10 (tie)	Kakai, Jade Knight
11	Porcelain Doll



Figure 1. The varieties most frequently liked by survey participants.



Figure 2. Pumpkin types that were less favored by survey participants.

**Striped Cucumber Beetles and Bacterial Wilt** - Jerry Brust, IPM Vegetable Specialist, University of Maryland; [jbrust@umd.edu](mailto:jbrust@umd.edu)

Striped cucumber beetles (*Acalymma vittatum*) (SCB) are the most important insect pests of muskmelon and cucumbers in our area. They overwinter as adults and emerge when temperatures reach 54-62° F at which time they begin searching for cucurbit hosts. Volatiles produced by the plant attracts SCB to cucurbits initially, then male SCBs produce an aggregation pheromone attracting more beetles. The beetles tend to mass on small plants where they eat, mate, and defecate (Fig. 1). This type of frenzied activity where there are many beetles feeding on a few leaves, or a small plant leads to increased chances of bacterial wilt development. The bacterium that causes bacterial wilt in cucurbits, *Erwinia tracheiphila*, is in the cucumber beetle’s feces. As the beetles defecate on the leaves where they are feeding the bacteria can be moved into open (feeding) wounds with water that is in the form of precipitation or dew. The more beetles that are feeding and opening wounds on susceptible crops like cucumbers and cantaloupe the greater the chance of bacterial wilt infection. The bacteria multiply and block plant xylem, restricting water flow to the rest of the plant; plants wilt and eventually die (Fig. 2). The wilting usually starts with just one heavily chewed upon leaf wilting and then this wilting progresses to the stem of the leaf and then to major vines of the plant. This process of vines and the entire plant wilting down can take 2-6 weeks after initial infection, but because the non-infected parts of the plant continue to grow growers might think when they see a plant wilt down that infection took place just within the last few days (Fig. 3).

One additional problem with SCB, and why control sprays may not work as well as they should under some conditions, is that the

beetles are consistently hiding at the base of the plant (in the plastic hole) where they are feeding on the stem (Fig. 4). Sprayers are set up usually to cover a lot of leaf canopy and often do not do a very good job of putting chemical down in the plant hole. This stem feeding can be severe enough to cause some wilting. It is hard enough to control cucumber beetles with a good cover spray, but when only small amounts of spray are reaching them down in the plastic hole they will not be controlled.

Melon cultivars have different susceptibilities to bacterial wilt infection. Watermelon is almost immune to infection while squash and pumpkin are moderately susceptible. Cantaloupe and cucumbers, as well as some of the specialty melon types are much more susceptible. Among the most susceptible cultivars are, Honeydew 252 and HD150 which are honeydew melons; Da Vinci which is a Tuscan melon type and Miracle and Sheba which are a netted yellow-green melons. Among the most tolerant cantaloupe cultivars are Aphrodite, Athena, Accolade and Astound which are all eastern cantaloupes and just happen to all start with A. The management methods that are recommended for bacterial wilt control for standard cantaloupe varieties (using seed treatments and insecticides when beetles reach 1 per plant or using kaolin clay or row covers before beetles appear) work well. For the specialty melons more attention is needed to carefully follow management recommendations.



**Figure 1.** Early season feeding of SCB on cucumber.



**Figure 2.** Cantaloupe plant killed by bacterial wilt infection.

## Fruit Crops

### Fruit Crop Insect Scouting

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#### Tree Fruit

Brian Kunkel noted in the Ornamental Hotline that in northern Delaware, white peach scale crawlers should be active now. San Jose scale were captured in pheromone traps deployed between April 13 and April 20 from Frankford, Denton, and Port Penn. We are using April 16 as a biofix. Crawlers emerge around 400-450-degree days after biofix, this would probably occur at some point around or after May 20-25, and UC IPM recommends timing a treatment around 200-degree days after crawler emergence begins, probably around June 1. There is a good article on them here:

<https://hort.extension.wisc.edu/articles/san-jose-scale> and here:

<https://ipm.ucanr.edu/agriculture/apple/san-jose-scale/>. Esteem and Senstar contain pyriproxyfen a.i. and buprofezin is sold as Centaur. In addition, Diazinon and Ultor (spirotetramat) is labeled.



Figure 3. Only the leaves at the base of the plant (arrows) were initially infected with *E. tracheiphila* but the whole plant eventually will die.



Figure 4. Striped cucumber beetle feeding damage at base of small plants.

### Delayed or Reduced Leafing out in Perennial Fruits

Gordon Johnson, Extension Vegetable & Fruit Specialist; [gcjohn@udel.edu](mailto:gcjohn@udel.edu)

We have a report of blueberries that are delayed in leafing-out or have little or no leaves on branches in 2023. When perennial fruits are delayed in leafing-out or have reduced leaves in the spring this is a sign of stress or physiological changes in the plants related to leaf and flower bud formation the previous year.

Perennial fruits that were stressed in 2022 may have fewer leaves in 2023. Stresses include drought, excess water, high winter water tables, herbicide damage, root pruning, insect damage above and below ground, root diseases, diseases that caused leaf drop, trunk and branch cankers, leaf drop from fungicides such as copper based

products, soil pH too high or low, high soil salts, salt spray, wind and storm damage, wildlife damage (deer, rabbits, voles) and other biotic or abiotic stressors. When perennial fruits drop leaves, fewer photosynthates are produced and stored (in roots, trunks, canes, crowns). Leaf-out the following spring is dependent on these reserves and if stores are reduced leaf formation will be delayed, leaves will be smaller or there will be fewer leaves.

Often individual branches or canes may not leaf out. This may be a sign of damage or disease on that branch or cane. Look for girdling from insects, wildlife, or disease cankers. In tree fruits, damage to the trunk or root system may show up with poor leaf out on a portion of the tree, often opposite of the damage, due to vascular connections being disrupted.



G. Johnson, University of Delaware

Peach branches with few leaves but with some fruits. These branches are in decline. Fruit should be removed.

When fruit plants experience poor leaf out, then they may go into decline and eventually die. This may take several years. Rarely do plants in decline recover.

Leaf buds are generally very resistant to cold temperatures; however, if freezing weather occurs after bud break, leaves can be damaged.

Another cause of delayed leaf development in certain fruits is inadequate chilling hours (cold period in the winter). Temperate fruits require temperatures between 32°F and 45°F to fulfill the chilling requirement of many plants. When temperatures dip below 32°F, very little, if any, chilling is received by the plant and when temperatures exceed 60-70°F for extended periods, chilling can be negated. Leaf and buds on the same plant can have different chilling requirements. Insufficient chilling can lead to delayed foliage formation, reduced fruit set, and poor fruit quality. This is often a problem in southern states, but we may see this on Delmarva in some varieties if winters are too mild.



Eric T. Stafne, Mississippi State

Southern highbush blueberry on the right that did not leaf out due to not enough chilling.

A final cause of reduced leaf formation is related to flower and leaf bud balance. This is often a problem in blueberries.

The following is from Becky Sideman, UNH Extension Professor & Specialist, Vegetable & Berry Crops

“Every year one of the most common questions I get is about blueberry fruit load. It is very typical for some branches, or in some cases, entire bushes, to have too many fruit and not enough leaves.

Too few leaves! After bloom, when fruits have set and the new growth is taking off, it usually becomes apparent that some branches do not have very many leaves. It is not that the leaves fell off - they never formed to start with. In some cases, the entire bush may be affected,



but it's usually only select canes. Canes or bushes that have very few leaves tend to have abnormally heavy fruit set, and those with lots of leaves have comparatively few fruits."

"What's going on? During the growing season, the blueberry bush forms buds for the next year - in spring and early summer, it puts out new shoots and, on these shoots, it produces leaf buds; later in summer it produces fruit buds at the tips of those new shoots. Heavy fruit set this year means that the bush had sufficient energy to produce a lot of fruit buds last year. This may have been because yields were light last year (at least on that branch) so they weren't spending energy ripening fruit. Many plants, including blueberry bushes, preferentially pour their energy into ripening fruit rather than leaves. This is why we often see branches that have either lots of fruit or lots of leaves, but not both."

"One of the goals of winter pruning is to bring fruit and leaf buds into balance on the bush. Heavier pruning reduces fruit but increases leaf canopy the following year. Therefore, bushes that were pruned more heavily do not generally show this problem as much as those that weren't pruned or that were pruned lightly. The goal is therefore to balance removing enough wood to stimulate new growth (future yields) with keeping fruit buds (current yields).

"Another complicating factor is that winter injury can weaken canes slightly without killing buds. Weaker canes have less energy overall, so this problem may be more apparent on exposed canes or older canes that were more susceptible to winter injury. The same goes for canes plagued by other problems - diseases, insect pressure, etc."



Blueberry bush with flowers but few leaves.

In crops such as brambles and blueberries, additional nitrogen fertilization can encourage more cane and leaf production. Where there are too many flowers and not enough leaves, you may want to manually strip fruit or do some selective pruning to reduce the fruit load. This is more important for young bushes (<3 years), where stress may limit future plant growth. In tree fruits eliminate sources of stress, remove fruits on weakened plants, irrigate regularly, keep weed free strips to limit competition, and keep regular spray schedules for insect and disease control.

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**Pollination in Watermelons**-Gordon Johnson,  
*Extension Vegetable & Fruit Specialist;*  
[gcjohn@udel.edu](mailto:gcjohn@udel.edu)

### Honeybees

A female watermelon flower will need around 500-1000 pollen grains to be fertilized effectively. This will require a minimum of 8 visits by a honeybee for seeded watermelons. In seedless watermelon more visits will be required. The pollen produced by seedless watermelons is not viable. To fertilize seedless watermelon, pollen must be transferred from viable male flowers in standard or special

pollinizer seeded types to triploid seedless female flowers. Because bees foraging in seedless watermelon plantings carry a mix of viable and non-viable pollen, more pollination visits (16 to 24) by honeybees are needed to set fruit.

First planted watermelons will be flowering in late May in Delaware and Maryland. Honeybees should be placed when the first female flowers appear to achieve good crown sets without defects (i.e. prominent lobes or hollow heart). Placement should be made before 10% of plants are in bloom.

The crown set in watermelon is fruit that set on one of the first 8 nodes of the plant. This is often the most profitable, especially early in the season. Poor crown sets in watermelon can occur when there is poor weather during early flowering. Honeybee flights are reduced significantly in rain and when winds are 15 mph or greater. Cloudy weather also reduces bee activity. Honeybees also do not fly much below 55°F, so on cold mornings, as we often have in June, bee activity will not pick up until later in the morning. Unfortunately, female watermelon flowers open early in the morning, are most receptive before 10 am, and then close in the afternoon.

In addition, in early mornings and during poor weather, bees usually visit plants closest to the hives. As the temperature rises or the weather improves, the bees will forage further from the hive. This means that in bad weather, watermelons closest to the hives will have the best set, and furthest from the hives will have reduced set.

Another problem that causes crown set reduction is the loss of pollinizer plants due to unfavorable weather conditions during or after planting. This means that pollen will be limiting. Research has shown that where pollen is limiting, fruit numbers will be reduced with distance from a pollen source. In fields with limited pollen, expect reduced fruit set or reduced fruit size in areas where pollinizers are missing.

Watermelon growers can manage crops for improved pollination and fruit set with honeybees by:

- Increasing the number of honeybee hives for early watermelon crops. A minimum of one strong hive per acre is recommended in general and 2 hives per acre can be justified for early planted fields.
- Placing hives in several locations in a field rather than just on one edge. While bees will fly over a mile, the best pollination activity is closest to the hives. Hives placed within the field will provide more bee visits to the crop compared to edge placements. Place hives in groups of 4-8 in good locations throughout the field to have even distribution of bees.
- Having ample sources of pollen by planting pollinizers at a minimum ratio of one pollinizer per every 3 seedless plants. Use the most effective pollinizers as shown by local trials. In-row pollinizers should have limited competitiveness with the seedless melons.



Honeybee visiting a male flower in a watermelon field. Photo credit Purdue University Entomology.

### **Bumble Bees**

Compared to a honeybee, bumble bees are about 10 times more efficient as a pollinator due to their size, the speed at which they transfer pollen, the efficiency with which they gather pollen within various crops, and their increased endurance to fly in adverse weather for longer periods of time. The bumble bee also has the ability to buzz pollinate the flower for pollen, a pollination technique not seen in honeybees. Buzz pollination occurs by bumble bees vibrating the flower by pumping their wings at a certain frequency, to dislodge pollen. Bumble bee foraging activity starts earlier and ends later in the day than managed honeybees and they

forage in lower temperatures. Because of these characteristics, fewer bees are needed to achieve the same crop pollination and commercial colonies only have about 200 bees each (800 per quad).

When assessing bumble bee activity, flag out 10 areas in your field and observe each area on three different days during bloom. These observations should last one minute under sunny, windless conditions, between 9 a.m. and noon. Approach each plot with care so as not to disturb the foraging bees. Stand about three feet from the crop to avoid blocking the flight path of the bees. Count and record the number of bumble bees at each flag, then calculate the average for your observations. You should have an average of one bumble bee per ten flags (0.1 bees per flag) to have adequate pollination.

Bumble bee colonies should be shaded and can be placed along shaded field edges. However, if there are other wildflowers nearby, they will also work in those areas, reducing their field effectiveness. Therefore, when placing bumble bees in watermelons or other flowering vegetable or fruit fields needing pollination, it is recommended that bumble bee quads be placed in the field middles under a shade canopy to have more foraging in the target field. Bumble bees should be placed far from honeybee hives to avoid honeybee pollen theft from bumble bee nests.

### **Insecticide Use**

Using IPM practices to limit insecticide use will also preserve bees and increase pollination. Research at Purdue University showed that yields were lower in fields with more applied insecticides. This is because of non-target effect of insecticides on visiting pollinators. Researchers found that “during 5 weekly surveys during peak watermelon flowering, there were 653 pollinators in the IPM plots, as opposed to just 349 in the conventionally managed plots. These visitors included “managed” species such as honeybee and bumblebees along with numerous native sweat bees and syrphid flies. The total number of visits to flowers and number of pollinating events (traveling from a male to a female flower) were recorded for all of the surveyed insects. The IPM plots had twice as

many total flower visits and three times as many pollinating events compared to the conventional watermelon plots. Since multiple insect visits are required for watermelon to produce healthy and marketable fruit, the reduced frequency of pollination could be leading to the differences in yield. These trends show that a “less is more” approach may be a superior management strategy when it comes to insecticides in watermelons and the other vegetable crops that rely on bees for pollination.” A factsheet on protecting pollinators can be found at <https://pollinatorprotection.org/wp-content/themes/pollinator/assets/pdf/POL-2.pdf>

## **Agronomic Crops**

**Agronomic Crop Insect Scouting** - David Owens, *Extension Entomologist*, [owensd@udel.edu](mailto:owensd@udel.edu)

### **Corn**

Continue scouting for cutworm in corn. You may see withered plants which can be indicative of cutworm, wireworm, or white grub attack. Cutworms will make burrows in the soil, such burrows will be as large as the diameter of a no.2 pencil and will have smooth sides. Heavy bird damage was reported in northern coastal fields. Bird damage (and other vertebrates) can be differentiated from cutworm by the presence of roots, or the below ground portion of the plant being pulled up, the hole surrounding the seedling, seed coatings lying on the ground, and holes with flat sides. Cutworm damage is more likely in fields with weeds or green cover crop at the time of planting.

### **Soybean**

Scout emerging soybeans carefully and regularly for slug damage. After we received a good rain 3 weeks ago, a large number of gray garden slug young juveniles became active. Fields with emerging cotyledons with more than 50% damage before unifoliates begin expanding may be at risk for stand reductions. Warm weather will help plants outgrow slug injury. If a field is tilled in any form or fashion to reduce slug activity, be sure to have an insecticide seed treatment on it to prevent our other early season pest from

damaging the stand (seedcorn maggot). Bean leaf beetle may become active soon. Thresholds are pretty high, with 1-2 beetles per plant before considering a rescue treatment.

### Alfalfa

If alfalfa has been cut, take a quick look at the stubble and regrowth for alfalfa weevil damage to make sure that there is not still a persistent population. Begin sweeping alfalfa for potato leaf hopper. While PLH typically arrives in mid-late May, it may be early this year due to the warm weather and mild winter.

### Early Season Moth Activity

Many thanks to Haley Sater with UMD Cooperative Extension and Joanne Whalen, extension entomologist emeritus extraordinaire for assistance with checking traps.

Location	# of Nights	Total Catch	
		TAW	BCW
Salisbury, MD	7	1	2
Seaford, DE	8		
Sudlersville, MD	7	0	6
Harrington, DE	8		
Smyrna, DE	6	189	36
Middletown, DE	6	4	26

### Scouting Fields for Fusarium Head Blight -

*Alyssa Koehler, Extension Field Crops Pathologist; [akoehler@udel.edu](mailto:akoehler@udel.edu)*

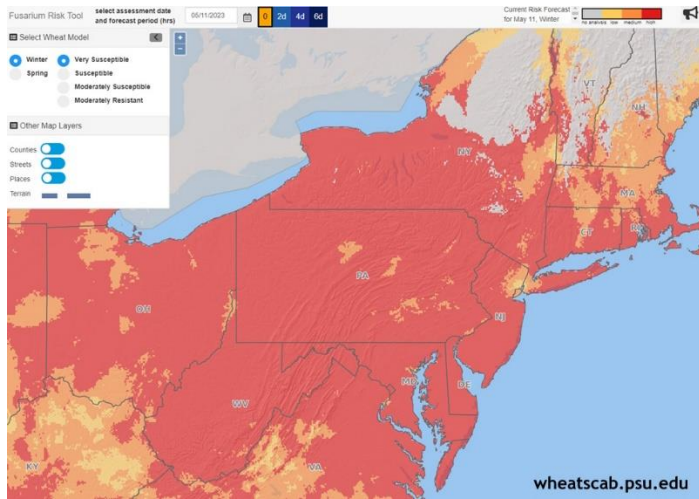
Wheat anthesis (flowering) is wrapping up. If you have fields that are still flowering, we are currently tracking at high risk for very susceptible (Figure 1) and medium-high risk for varieties with some level of resistance (Figure 2) in the risk model. We should have remained at low risk for most barley fields. We are just reaching the point where symptoms in barley may start to become visible (Figure 3). In my scouting so far, I have seen very limited FHB in barley. Once wheat has flowered, symptoms of FHB are usually visible in 18-24 days, but cool weather can slow symptom development. Heads with FHB will have bleached florets or bleached

sections of the head and may have pink growth on spikelets. Glume blotch may also be present, but typically has more of a grey appearance. You can follow these steps to assess the severity of FHB present in your field.

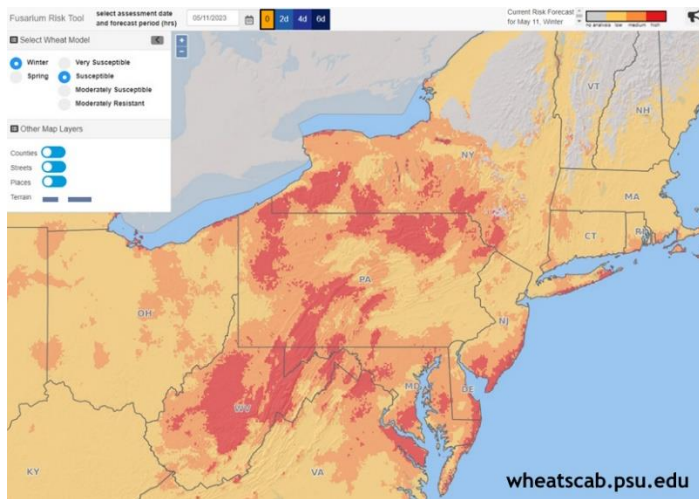
1. For every 10 acres of field, randomly select one spot to survey.
2. Keeping your line of sight above the wheat heads, walk 40-50 yards and randomly pick 10-20 heads to look at on the plant or detach and place into a bag. (Looking down may bias the heads you select).
3. Once you have randomly collected the heads, rate the percent of each head with symptoms of FHB (bleaching or pink growth on spikelets). You can use the scale included to help calibrate your eye.
4. After you have recorded values for each head, determine the average percent FHB severity by dividing the sum of disease severities by the total number of heads collected.

(Ex. You rate 10 heads with severity values: 0%, 10%, 30%, 0%, 0%, 20%, 10%, 0%, 0%, 0%. These add up to 70. 70/10 heads = 7% overall FHB severity)  
Higher levels of FHB are typically associated with elevated levels of DON and possible issues with yield and test weight. It is possible to have delayed or lower levels of symptoms and still have DON.

5. Repeat this assessment as needed to get an overall rating for the field. Fields with greater than 10% FHB severity are at higher risk for yield losses or elevated DON. Fields with elevated DON should be harvested as early as possible and you may want to consider increasing combine fan speeds and shutter openings to reduce the amount of scabby kernels harvested.



**Figure 1.** FHB Risk Model for very susceptible varieties May 11, 2023



**Figure 2.** FHB Risk Model for susceptible varieties May 11, 2023



**Figure 3.** Symptoms of FHB starting to become visible on malting barley



0%

7%

14%

21%

33%

50%



50%

66%

79%

90%

100%

Adapted from the Visual Scale to Estimate Severity of Fusarium Head Blight in Wheat by NDSU Extension Service.

To access the full document, scan the QR code



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**Narrow Row Soybeans are a big Advantage for Weed Control**-Mark VanGessel, *Extension Weed Specialist*; [mjv@udel.edu](mailto:mjv@udel.edu)

As herbicide-resistance continues to spread, we need to diversify weed control to put less

selection pressure for developing resistant populations. We are finding more fields with Palmer amaranth and common ragweed resistant to three modes of action: in many cases leaving no good herbicide options.

Many alternatives to herbicides often require significant changes to production practices. For instance, cultivation is not compatible with no-till production.

Some of the newer tactics like weed electrocution or impact mills on combines are quite effective, but they operate later in the season or at harvest after the weeds have had a chance to compete with the crop and have reduced yields.

Planting into a recently killed cover crop or planting green (killing the cover crop after planting) both significantly reduce the number and size of weed seedlings early in the season. Fewer weeds that emerge mean fewer weeds are exposed to herbicides and less selection pressure for herbicide-resistant weeds. Moreover, for those weed seedlings that emerge, their growth rate is much slower in the presence of a cover crop than growing with bareground, providing a wider window for postemergence treatment. Planting into a field with lots of cover crop residue or planting green, often require some planter modifications, such as sharp, straight coulters (not wavy ones), extra weight, or adjustment to closing wheels. Therefore, if you were not planning on using this approach, it may be too late for this season.

A good crop canopy that shades the ground quickly is very effective, and I am not aware of any weed that grows well under a crop canopy without sunlight. Planting in 15-inch rows instead of 30-inch rows is the best way to achieve this. Soybean leaves will fill in between the rows 7 to 10 days sooner at 15 inches compared to 30 inches and can make a big difference. In my opinion (and assuming you have access to a planter with 15-inch row units), soybeans in 15-inch rows is one of the best strategies to diversify a weed control program.

## Soybeans Planted in 30" Rows



Figure 1: 30-inch row soybeans

## Soybeans Planted in 15" Rows



Figure 2: 15-inch row soybeans

Soybean plots side by side; planted with the same variety on the same day. The only difference is the top photo are soybeans planted in 30-inch rows and bottom photo is 15-inch rows.

A recent article in the UD Agronomy Blog (<https://sites.udel.edu/agronomy/> January 27, 2023) discusses an increase in yield with 15-inch rows compared to 30-inch rows.

So narrow soybeans is a “low-hanging” fruit to diversify a weed management program for soybeans with limited downside

## **Italian/Annual Ryegrass Control Issues Before Corn Planting**

Mark VanGessel, *Extension Weed Specialist*;  
[mjv@udel.edu](mailto:mjv@udel.edu)

I have visited a number of fields and taken phone calls about Italian/annual ryegrass control in corn. In many cases, the ryegrass is the only plant that survived the burndown treatment. Ryegrass is hard to control ahead of corn. Glyphosate is the standard treatment, but it should be applied by itself, with water, and applied during a string of days with 60+ temperature. When going into soybeans, Select/clethodim or similar product in combination with glyphosate is the best option.

Most of the fields have only a few scattered plants and it was not necessary to retreat. Those corn fields with high densities should be retreated with glyphosate plus Resolve/rimsulfuron.

## **General**

**Pumpkin Enterprise Budgets** - Nate Bruce,  
*Farm Business Management Specialist*,  
[nsbruce@udel.edu](mailto:nsbruce@udel.edu)



Enterprise budgets for producing pumpkins using either plastic and drip irrigation or no-till have been created for the 2023 growing year. Returns for pumpkins are given in either pounds per acre or pumpkins per acre if selling directly to consumers. You can use these budgets to

estimate your production costs and returns. The budgets are in Excel. The first tab contains research estimated costs and returns. The second tab allows you to enter your own costs and returns. [Access the Pumpkin Budget Excel file here.](#)

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## **Rain and Weed Control**

Mark VanGessel, *Extension Weed Specialist*;  
[mjv@udel.edu](mailto:mjv@udel.edu)

A few weeks ago, I wrote about lack of rain to activate herbicides, now I am being asked about how much herbicide is left after the big rains. Many areas of the state received at least 3 inches of rain two weeks ago and so what does that mean for fields that had the preemergence herbicide applied earlier. The easy answer is there is less in the top inch of soil where herbicides need to be for weed control. However, how much is still there, is hard to say. Fields sprayed before last weekend will need to be looked at regularly for “weed breaks” (weed emergence), which is likely to occur sooner than normal. Fields that need an early postemergence spray probably will need to include a residual herbicide to carry the field to canopy closure.

There were a number of fields with standing water, and we are likely to see the crop drown out in those spots. Continue to assess those drowned out areas, and even though there is no crop, they need to be treated. Do not give up on those areas; they need to be treated otherwise they will have weeds grow and produce many seeds (due to lack of a crop) which will be an issue for years to come.



## **Burcucumber Control**

Mark VanGessel, *Extension Weed Specialist*;  
[mjv@udel.edu](mailto:mjv@udel.edu)

I have gotten a few questions about burcucumber over the winter. Like many things, weeds seem to be cyclical. They are a problem for a few years, then we get them under control and then sometime later we start to get questions about them again. Burcucumber has a large seed, which means it can emerge when the seeds are buried 3 to 4 inches deep. The seed buried that deep is often not controlled with soil-applied herbicides. It continues to germinate throughout the season, so “season-long” control is essential. It grows rapidly in warm weather and has tendrils that allow it to grow up and across the tops of a grain crop.

For most consistent control, it will require at least a two-pass herbicide program, but sometimes an additional application may be required. Effective management must include both preemergence and postemergence (foliar-applied) herbicides. POST herbicides provide the best Burcucumber control. POST programs that include effective foliar and residual herbicides will enhance season-long control by killing later emerging Burcucumber flushes. Below are some suggestions for optimal control during the growing season.

### **Control in Corn**

Several corn herbicides provide good control of Burcucumber.

Effective preemergence herbicides include:

- Lexar
- Acuron
- Corvus + atrazine
- Balance Flexx + atrazine

### **Postemergence herbicides**

Glyphosate, Liberty or dicamba/Status will stop Burcucumber before they begin to vine (max height 6 to 8 inches tall). However, none of them will provide residual control so treatment should include a residual herbicide.

Tankmix options for residual control with a POST application include Peak, Callisto, and atrazine. Penn State trials have shown very good results with Peak, but be aware it has some rotational issues (refer to label).

### **Control in Soybeans**

Generally, Burcucumber control in soybeans may be easier and less costly than it is in corn.

Planting soybeans in 30-inch rows can allow for cultivation and for later postemergence herbicide applications; however, the quicker canopy closure that occurs in narrower rows also can help to reduce later emerging weeds, including Burcucumber. Preemergence followed by postemergence of herbicides typically are needed for full-season control of Burcucumber.

In general, products that contain chlorimuron and/or metribuzin provide the best initial early season suppression of Burcucumber. These soil-applied products include:

- Authority MTZ 45DF (sulfentrazone + metribuzin)
- Authority XL 70WG (sulfentrazone + chlorimuron)
- Canopy 75DF (chlorimuron + metribuzin)
- Envive 41.3WG (chlorimuron + flumioxazin + thifensulfuron)
- Fierce XLT 62.41WG (pyroxasulfone + flumioxazin + chlorimuron)
- Trivence 61.3WG (chlorimuron + metribuzin + flumioxazin)
- Valor XLT 40.3WG (flumioxazin + chlorimuron)

### **Postemergence**

- The most consistent postemergence options include chlorimuron (Classic). Chlorimuron provides both foliar and residual activity on Burcucumber (however chlorimuron is typically tankmixed with glyphosate for improved postemergence control). If using Synchrony (which contains chlorimuron), be sure to use STS soybeans to avoid crop

injury.

- In Xtend soybean systems, Xtendimax or Engenia can be used, but it will not provide residual control.
- Glyphosate or glufosinate (Liberty) will kill emerged Burcucumber but will not provide residual control.

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### **Guess The Pest! May 5 Answer Spongy / Gypsy Moth**

*David Owens, Extension Entomologist,*  
[owensd@udel.edu](mailto:owensd@udel.edu)

Wow, apparently Spongy or Gypsy moth is a popularly despised insect! A lot of folks correctly identified this one. Congratulations Sara Collins and many, many others. Last year it caused significant defoliation in hardwood forest in Laurel, Seaford, and Gumboro. Damage will be evident soon if this year is anything like last year's infestation. Oak trees are a preferred host and can only tolerate a couple of seasons of defoliation before experiencing significant decline and death. It was first brought over by an artist wanting to breed it with silkworms to create a silk industry. It ranges from North Carolina diagonally up to Minnesota and causes almost a billion dollars of damage per year.



### **Guess The Pest! May 12**

*David Owens, Extension Entomologist,*  
[owensd@udel.edu](mailto:owensd@udel.edu)

This year, Guess the Pest participants will be entered into an end of season sweep net drawing (as well as other potential items). To enter a guess, click on the Guess The Pest Logo or by visiting: <http://www.udel.edu/008255>

Let's take a pause from the bug photos and hop into plants for a DAILY DOUBLE! This time of the year I look into my wildflower garden eager to see what new plant will take root and I get excited when I see this marigold/cosmos looking thing only to be disappointed later. Or this other exciting looking seedling with a penchant for growing fast but not giving a nice flower. What are they?






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## Announcements

### Pest & Beneficial Insect & Plant Disease Walks

Sussex Pest Walk: June 6, 4:00-6:00 pm

Kent Pest Walk: June 13, 4:00-6:00 pm

NCC Pest Walk: June 15, 4:00-6:00 pm

Diagnostics hands-on workshop: July 11

Save the Dates! Featuring Experts Jill Pollok, Brian Kunkel & John Emerson.

*More information to follow.*

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### A Day in the Garden Open House

Saturday, June 24, 2023 10:00 a.m.-2:00 p.m.  
Carvel Research & Education Center  
16483 County Seat Hwy, Georgetown, DE

Join Sussex County Master Gardeners for a tour of their demonstration garden! Attend workshops and tours, enjoy the Peter Rabbit puppet show, go on a scavenger hunt, and shop the Plant and Book Sale!

[Register online](#) or call 302-856-7303

### Mini Workshops

10:30 a.m. - New to Delaware with MG Susan Trone and MG Maggie McLaughlin

11:00 a.m. - Propagating Hydrangeas with MG Michele Walfred

11:30 a.m. - Making Salsa with MG Ana Dittel

12:00 p.m. - Growing Groundcovers with MG Gainor Urian

12:30 p.m. - Log and Succulent Centerpiece with MG Mary Noel - space limited to 20

1:00 p.m. - Small Fruits Tour with Emmalea Ernest, UD Fruit & Vegetable Scientist

### Displays

Plant Sale - lots of natives!

Beekeepers - MG Chris Dominic, Jim Hopkins

Ask an Expert with Brian Kunkel, Megan Pleasanton, and Tracy Wootten - Bring your sick plants and gardening questions!

Invasives - Crape Myrtle Bark Scale, Invasive Plant Law, Ban Information

Bugs - Dennis Barto

And more!

### Children's Activities

CD Painting

Butterfly Scavenger Hunt

Peter Rabbit Puppet Show

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### Grower Survey to Understand Implementation of Produce Safety Practices, Costs, and Barriers

The Produce Safety Alliance (PSA) Team and personnel from the Northeast Center to Advance Food Safety (NECAFS) at the University of Vermont would like to understand the costs and the barriers of beginning or expanding food safety practices on farms and in packinghouses to make educational materials more relevant to fruit and vegetable growers and packers. To do so, we are asking personnel from fruit and vegetable operations to share their experiences of produce safety practice implementation and the costs

they have incurred meeting produce safety standards and market expectations.

Use the link below to learn more and participate in the survey:

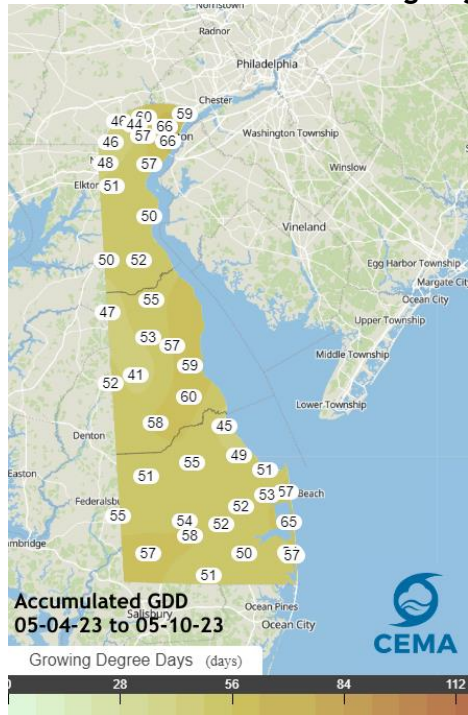
[https://qualtrics.uvm.edu/jfe/form/SV\\_agW9o6VWOU CivCC](https://qualtrics.uvm.edu/jfe/form/SV_agW9o6VWOU CivCC)

The survey is also available in Spanish:

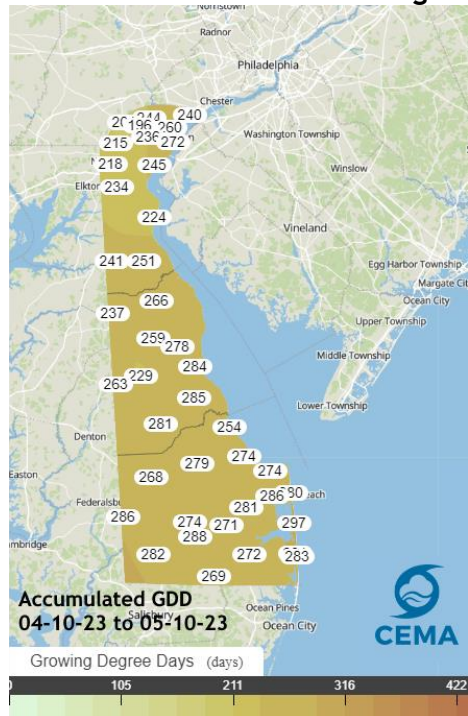
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# Weather Summary

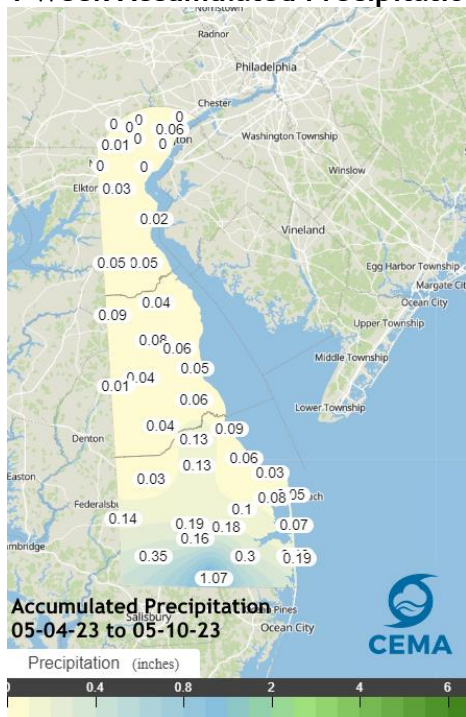
## 1 Week Accumulated Growing Degree Days



## 1 Month Accumulated Growing Degree Days



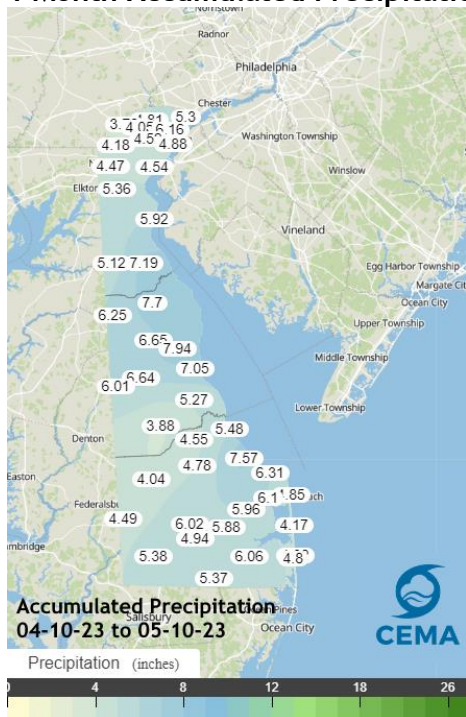
## 1 Week Accumulated Precipitation



*Weekly Crop Update is compiled and edited by Emmalea Ernest, Scientist - Vegetable Crops and Drew Harris - Kent Co. Ag Agent*

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## 1 Month Accumulated Precipitation



Reference to commercial products or trade names does not imply endorsement by University of Delaware Cooperative Extension or bias against those not mentioned.

These weather maps are generated from DEOS weather station data and are part of a new Ag Weather website that is under development. Your feedback is welcome!